16

CLAIMS

1.   A modulator, including a multiplexing/coding chain, operable with a first memory in which transport channels, comprised of transport blocks, are stored and a second memory, comprising:

a concatenator for reading transport blocks from the first memory, removing bits not intended for transmission from the read transport blocks, and storing the concatenated transport blocks in the second memory.

2.   A modulator, including a multiplexing/coding chain, operable with a memory in which transport channels, comprised of transport blocks, are stored, comprising:

a channel coder for coding the transport channels from the memory, wherein the coding of subsets of the transport channels can be repeated; and

an interleaver for receiving the coded transport channels and selecting subsets of each coded transport channel and the repeated coded transport channels to produce a coded, interleaved data stream.

3.   A multiplexing/coding chain, operable with a first memory in which transport channels, comprised of transport blocks, are stored and a second memory, comprising:

a concatenator for reading transport blocks from the first memory, removing bits not intended for transmission from the read transport blocks, and storing the concatenated transport blocks in the second memory.

4.   The multiplexing/coding chain of claim 3, further comprising a cyclic redundancy check (CRC) generator for computing CRCs with the read transport blocks and appending the CRCs to the concatenated transport blocks stored in the second memory.

5. The multiplexing/coding chain of claim 4, further comprising a ciphering block for ciphering the transport blocks to be concatenated and stored in the second memory.

6. The multiplexing/coding chain of claim 3, wherein the concatenated transport blocks are stored according to descending transmission time intervals in the second memory.

7. A multiplexing/coding chain, operable with a memory in which transport channels, comprised of transport blocks, are stored, comprising:

a channel coder for coding the transport channels from the memory, wherein the coding of subsets of the transport channels can be repeated; and

an interleaver for receiving the coded transport channels and selecting subsets of each coded transport channel and the repeated coded transport channels to produce a coded, interleaved data stream.

8. The multiplexing/coding chain of claim 7, further comprising a code block segmentor for segmenting transport channels greater than the channel coder block size and padding transport channels smaller than the channel coder block size.

9. The multiplexing/coding chain of claim 7, further comprising a radio frame equalizer for adding filler bits to the output of the channel coder.

10. The multiplexing/coding chain of claim 7, further comprising a rate matcher for puncturing and repeating bits of the coded, interleaved data stream to conform to data rates for the transport channels to produce a rate-matched, coded, interleaved data stream.

11.   The multiplexing/coding chain of claim 10, further comprising a second interleaver for interleaving the rate-matched, coded, interleaved data stream to produce a coded, composite transport channel.

12.   The multiplexing/coding chain of claim 11, wherein the second interleaver comprises:

a memory for storing words of the rate-matched, coded, interleaved data stream; and

an accessor for accessing columns of the memory to produce a coded, composite, transport channel.

13.   The multiplexing/coding chain of claim 12, wherein the memory of the second interleaver is double-buffered.

14.   A multiplexing/coding chain, operable with a first memory in which transport channels, comprised of transport blocks, are stored and a second memory, comprising:

a concatenator for reading transport blocks from the first memory, removing bits not intended for transmission from the read transport blocks, and storing the concatenated transport blocks in the second memory;

a channel coder for coding the transport channels from the second memory, wherein the coding of subsets of the transport channels can be repeated; and

an interleaver for receiving the coded transport channels and selecting subsets of each coded transport channel and the repeated coded transport channels to produce a coded, interleaved data stream.

15.   The multiplexing/coding chain of claim 14, further comprising a cyclic redundancy check (CRC) generator for computing CRCs with the read transport blocks and appending the CRCs to the concatenated transport blocks stored in the second memory.

16.   The multiplexing/coding chain of claim 15, further comprising a ciphering block for ciphering the transport blocks to be concatenated and stored in the second memory.

17.   The multiplexing/coding chain of claim 14, wherein the concatenated transport blocks are stored according to descending transmission time intervals in the second memory.

18.   The multiplexing/coding chain of claim 14, further comprising a code block segmentor for segmenting transport channels greater than the channel coder block size and padding transport channels smaller than the channel coder block size.

19.   The multiplexing/coding chain of claim 14, further comprising a radio frame equalizer for adding filler bits to the output of the channel coder.

20.   The multiplexing/coding chain of claim 14, further comprising a rate matcher for puncturing and repeating bits of the coded, interleaved data stream to conform to data rates for the transport channels to produce a rate-matched, coded, interleaved data stream.

21.   The multiplexing/coding chain of claim 20, further comprising a second interleaver for interleaving the rate-matched, coded, interleaved data stream to produce a coded, composite transport channel.

22.   An access terminal, for use in a CDMA system, including a multiplexing/coding chain, operable with a first memory in which transport channels, comprised of transport blocks, are stored and a second memory, comprising:

a concatenator for reading transport blocks from the first memory, removing bits not intended for transmission from the read transport blocks, and storing the concatenated transport blocks in the second memory.

23. An access terminal, for use in a CDMA system, including a multiplexing/coding chain, operable with a memory in which transport channels, comprised of transport blocks, are stored, comprising:

a channel coder for coding the transport channels from the memory, wherein the coding of subsets of the transport channels can be repeated; and

an interleaver for receiving the coded transport channels and selecting subsets of each coded transport channel and the repeated coded transport channels to produce a coded, interleaved data stream.

24. An access point, for use in a CDMA system, including a multiplexing/coding chain, operable with a first memory in which transport channels, comprised of transport blocks, are stored and a second memory, comprising:

a concatenator for reading transport blocks from the first memory, removing bits not intended for transmission from the read transport blocks, and storing the concatenated transport blocks in the second memory.

25. An access point, for use in a CDMA system, including a multiplexing/coding chain, operable with a memory in which transport channels, comprised of transport blocks, are stored, comprising:

a channel coder for coding the transport channels from the memory, wherein the coding of subsets of the transport channels can be repeated; and

an interleaver for receiving the coded transport channels and selecting subsets of each coded transport channel and the repeated coded transport channels to produce a coded, interleaved data stream.

26. A W-CDMA system, including a multiplexing/coding chain, operable with a first memory in which transport channels, comprised of transport blocks, are stored and a second memory, comprising:

a concatenator for reading transport blocks from the first memory, removing bits not intended for transmission from the read transport blocks, and storing the concatenated transport blocks in the second memory.

27. A W-CDMA system, including a multiplexing/coding chain, operable with a memory in which transport channels, comprised of transport blocks, are stored, comprising:

a channel coder for coding the transport channels from the memory, wherein the coding of subsets of the transport channels can be repeated; and

an interleaver for receiving the coded transport channels and selecting subsets of each coded transport channel and the repeated coded transport channels to produce a coded, interleaved data stream.

28. A method of modulation comprising:

reading transport blocks stored in a first memory; and

writing only those bits of the transport blocks intended for transmission into a second memory in concatenated form.

29. The method of claim 28, further comprising:

computing a CRC for each of the transport blocks; and

appending the CRCs to the concatenated transport blocks when writing to the second memory.

30. The method of claim 28, further comprising ciphering the concatenated transport blocks prior to storage in the second memory.

31. A method of modulation comprising:

reading transport channels from a memory;

channel coding the transport channels;

repeating the channel coding step; and

selecting subsets from each of the repeated channel coding

outputs to produce a coded, interleaved data stream.

32. The method of claim 31, further comprising channel code block

segmentation wherein transport channels larger than channel code blocks are

segmented and transport channels smaller than channel code blocks are padded.

33. The method of claim 31, further comprising radio frame

equalization wherein filler bits are inserted into the output of the channel coding step.

34. The method of claim 31, further comprising rate matching

wherein bits are punctured and repeated to conform to data rates for the transport

channels.

35. The method of claim 34, further comprising interleaving the

output of the rate matching step.